<!--StartFragment-->RESULT 1
ABR55370
ID ABR55370 standard; peptide; 58 AA.
XX
AC ABR55370;
XX
DT 29-JUL-2003 (first entry)
XX
DE Amino acid sequence of dortoxin.
XX
KW Scorpion; birtoxin; venom; blood brain barrier; ion channel;
KW kinin receptor; insecticide; pesticide; dortoxin.
XX
OS Parabuthus transvaalicus.
XX
PN WO2003028666-A2.
XX
PD 10-APR-2003.
XX
PF 04-OCT-2002; 2002WO-US031861.
XX
PR 04-OCT-2001; 2001US-0327602P.
PR 28-JUN-2002; 2002US-0393070P.
XX
PA (REGC) UNIV CALIFORNIA.
XX
PI Hammock BD, Inceoglu B;
XX
DR WPI; 2003-441071/41.
XX
PT Novel scorpion birtoxin family polypeptide derived from venom of
PT Parabuthus transvaalicus, useful for producing a composition for treating
PT diseases or conditions associated with ion channel function or kinin
PT activity.
XX
PS Claim 6; Page 74; 104pp; English.
XX
CC The specification describes a scorpion birtoxin family polypeptide,
CC derived from the venom of Parabuthus transvaalicus, separated from its
CC natural milieu. The polypeptide is a modulator of the permeability of the
CC blood brain barrier. The polypeptide also has an an ion channel binding
CC activity of a birtoxin family polypeptide and kinin receptor activity.
CC The peptide is useful for modulating the permeability of the blood brain
CC barrier. It is also useful for producing pharmaceutical compositions
CC which are useful for treating diseases and conditions associated with the
CC ion channel function or kinin activity. Antibodies generated using the
CC polypeptide are useful for detecting the presence of scorpion venom toxin
CC and in altering birtoxin family polypeptide-ion channel binding or kinin
CC activity. Antivenom comprising these antibodies is useful as an
CC insecticide or pesticide. The present sequence represents dortoxin of
CC Parabuthus transvaalicus, a polypeptide of the invention
XX
SQ Sequence 58 AA;

  Query Match   66.6%; Score 228.5; DB 6; Length 58;
  Best Local Similarity   66.1%; Pred. No. 3.1e-19;
  Matches   37; Conservative   7; Mismatches   11; Indels   1; Gaps   1;

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Qy          1 ADVPGNYPLDSSDNTYLCAPLGDNPDCIKICQKHGVDYGYCYAFQCWC-EFLKDEN 55
              ||||||||||   ||| |  ||:| || |:|: ||| |||||||:||| |:| |::
Db          1 ADVPGNYPLDKDGNTYTCLKLGENKDCQKVCKLHGVQYGYCYAFECWCKEYLDDKD 56
```

RESULT 2
ABR55371
ID ABR55371 standard; peptide; 58 AA.
XX
AC ABR55371;
XX
DT 29-JUL-2003 (first entry)
XX
DE Amino acid sequence of bestoxin.
XX
KW Scorpion; birtoxin; venom; blood brain barrier; ion channel;
KW kinin receptor; insecticide; pesticide; bestoxin.
XX

```
OS   Parabuthus transvaalicus.
XX
PN   WO2003028666-A2.
XX
PD   10-APR-2003.
XX
PF   04-OCT-2002; 2002WO-US031861.
XX
PR   04-OCT-2001; 2001US-0327602P.
PR   28-JUN-2002; 2002US-0393070P.
XX
PA   (REGC ) UNIV CALIFORNIA.
XX
PI   Hammock BD,  Inceoglu B;
XX
DR   WPI; 2003-441071/41.
XX
PT   Novel scorpion birtoxin family polypeptide derived from venom of
PT   Parabuthus transvaalicus, useful for producing a composition for treating
PT   diseases or conditions associated with ion channel function or kinin
PT   activity.
XX
PS   Claim 6; Page 75; 104pp; English.
XX
CC   The specification describes a scorpion birtoxin family polypeptide,
CC   derived from the venom of Parabuthus transvaalicus, separated from its
CC   natural milieu. The polypeptide is a modulator of the permeability of the
CC   blood brain barrier. The polypeptide also has an an ion channel binding
CC   activity of a birtoxin family polypeptide and kinin receptor activity.
CC   The peptide is useful for modulating the permeability of the blood brain
CC   barrier. It is also useful for producing pharmaceutical compositions
CC   which are useful for treating diseases and conditions associated with the
CC   ion channel function or kinin activity. Antibodies generated using the
CC   polypeptide are useful for detecting the presence of scorpion venom toxin
CC   and in altering birtoxin family polypeptide-ion channel binding or kinin
CC   activity. Antivenom comprising these antibodies is useful as an
CC   insecticide or pesticide. The present sequence represents bestoxin of
CC   Parabuthus transvaalicus, a polypeptide of the invention
XX
SQ   Sequence 58 AA;

  Query Match             66.0%;  Score 226.5;  DB 6;  Length 58;
  Best Local Similarity   66.1%;  Pred. No. 5.3e-19;
  Matches   37;  Conservative    6;  Mismatches   12;  Indels    1;  Gaps    1;

Qy          1 ADVPGNYPLDSSDNTYLCAPLGDNPDCIKICQKHGVDYGYCYAFQCWC-EFLKDEN 55
              ||||||||||   ||| |  ||:| || |:|: ||| ||||||| ||| |:| |::
Db          1 ADVPGNYPLDKDGNTYTCLELGENKDCQKVCKLHGVQYGYCYAFSCWCKEYLDDKD 56


RESULT 3
ABR55369
ID   ABR55369 standard; peptide; 58 AA.
XX
AC   ABR55369;
XX
DT   29-JUL-2003  (first entry)
XX
DE   Amino acid sequence of ikitoxin.
XX
KW   Scorpion; birtoxin; venom; blood brain barrier; ion channel;
KW   kinin receptor; insecticide; pesticide; ikitoxin.
XX
OS   Parabuthus transvaalicus.
XX
PN   WO2003028666-A2.
XX
PD   10-APR-2003.
XX
PF   04-OCT-2002; 2002WO-US031861.
XX
PR   04-OCT-2001; 2001US-0327602P.
PR   28-JUN-2002; 2002US-0393070P.
XX
PA   (REGC ) UNIV CALIFORNIA.
XX
```

PI Hammock BD, Inceoglu B;
XX
DR WPI; 2003-441071/41.
XX
PT Novel scorpion birtoxin family polypeptide derived from venom of
PT Parabuthus transvaalicus, useful for producing a composition for treating
PT diseases or conditions associated with ion channel function or kinin
PT activity.
XX
PS Claim 6; Page 73; 104pp; English.
XX
CC The specification describes a scorpion birtoxin family polypeptide,
CC derived from the venom of Parabuthus transvaalicus, separated from its
CC natural milieu. The polypeptide is a modulator of the permeability of the
CC blood brain barrier. The polypeptide also has an an ion channel binding
CC activity of a birtoxin family polypeptide and kinin receptor activity.
CC The peptide is useful for modulating the permeability of the blood brain
CC barrier. It is also useful for producing pharmaceutical compositions
CC which are useful for treating diseases and conditions associated with the
CC ion channel function or kinin activity. Antibodies generated using the
CC polypeptide are useful for detecting the presence of scorpion venom toxin
CC and in altering birtoxin family polypeptide-ion channel binding or kinin
CC activity. Antivenom comprising these antibodies is useful as an
CC insecticide or pesticide. The present sequence represents ikitoxin of
CC Parabuthus transvaalicus, a polypeptide of the invention
XX
SQ Sequence 58 AA;

Query Match 65.3%; Score 224; DB 6; Length 58;
Best Local Similarity 63.0%; Pred. No. 1e-18;
Matches 34; Conservative 9; Mismatches 11; Indels 0; Gaps 0;

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Qy          1 ADVPGNYPLDSSDNTYLCAPLGDNPDCIKICQKHGVDYGYCYAFQCWCEFLKDE 54
              ||||||||||   ||| |  ||:| :|: :|: ||| |||||| :||||:|:|:
Db          1 ADVPGNYPLDKDGNTYKCFLLGENEECLNVCKLHGVQYGYCYASKCWCEYLEDD 54
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RESULT 4
ABR55368
ID ABR55368 standard; peptide; 58 AA.
XX
AC ABR55368;
XX
DT 29-JUL-2003 (first entry)
XX
DE Amino acid sequence of birtoxin.
XX
KW Scorpion; birtoxin; venom; blood brain barrier; ion channel;
KW kinin receptor; insecticide; pesticide.
XX
OS Parabuthus transvaalicus.
XX
PN WO2003028666-A2.
XX
PD 10-APR-2003.
XX
PF 04-OCT-2002; 2002WO-US031861.
XX
PR 04-OCT-2001; 2001US-0327602P.
PR 28-JUN-2002; 2002US-0393070P.
XX
PA (REGC) UNIV CALIFORNIA.
XX
PI Hammock BD, Inceoglu B;
XX
DR WPI; 2003-441071/41.
XX
PT Novel scorpion birtoxin family polypeptide derived from venom of
PT Parabuthus transvaalicus, useful for producing a composition for treating
PT diseases or conditions associated with ion channel function or kinin
PT activity.
XX
PS Claim 6; Page 71; 104pp; English.
XX
CC The specification describes a scorpion birtoxin family polypeptide,
CC derived from the venom of Parabuthus transvaalicus, separated from its

```
CC   natural milieu. The polypeptide is a modulator of the permeability of the
CC   blood brain barrier. The polypeptide also has an an ion channel binding
CC   activity of a birtoxin family polypeptide and kinin receptor activity.
CC   The peptide is useful for modulating the permeability of the blood brain
CC   barrier. It is also useful for producing pharmaceutical compositions
CC   which are useful for treating diseases and conditions associated with the
CC   ion channel function or kinin activity. Antibodies generated using the
CC   polypeptide are useful for detecting the presence of scorpion venom toxin
CC   and in altering birtoxin family polypeptide-ion channel binding or kinin
CC   activity. Antivenom comprising these antibodies is useful as an
CC   insecticide or pesticide. The present sequence represents birtoxin of
CC   Parabuthus transvaalicus, a polypeptide of the invention
XX
SQ   Sequence 58 AA;

  Query Match             64.4%;  Score 221;  DB 6;  Length 58;
  Best Local Similarity   63.0%;  Pred. No. 2.3e-18;
  Matches   34;  Conservative    8;  Mismatches   12;  Indels    0;  Gaps    0;

Qy          1 ADVPGNYPLDSSDNTYLCAPLGDNPDCIKICQKHGVDYGYCYAFQCWCEFLKDE 54
              ||||||||||   ||| |  || | :|: :|: ||| |||||| :||||:|:|:
Db          1 ADVPGNYPLDKDGNTYKCFLLGGNEECLNVCKLHGVQYGYCYASKCWCEYLEDD 54


RESULT 5
AAB20075
ID   AAB20075 standard; protein; 89 AA.
XX
AC   AAB20075;
XX
DT   11-SEP-2003  (revised)
DT   23-APR-2001  (first entry)
XX
DE   Scorpion sodium channel agonist (insecticidal toxin).
XX
KW   Scorpion; venom; toxin; sodium channel agonist; anticonvulsant;
KW   nootropic; cerebroprotective; insecticide.
XX
OS   Hottentotta judaica.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .21
FT                   /label= Sig_peptide
FT   Protein         22. .89
FT                   /label= Mature_protein
XX
PN   WO200078957-A2.
XX
PD   28-DEC-2000.
XX
PF   21-JUN-2000; 2000WO-US017048.
XX
PR   22-JUN-1999;   99US-0140410P.
XX
PA   (DUPO ) DU PONT DE NEMOURS & CO E I.
XX
PI   Herrmann R,  Lee J,  Wong JF;
XX
DR   WPI; 2001-050111/06.
DR   N-PSDB; AAA89397.
XX
PT   New isolated polynucleotide encoding a scorpion toxin for treating
PT   epilepsy, degenerative disorders such as Huntington's disease, and
PT   neuronal death following stroke, and for creating plants that are insect-
PT   tolerant.
XX
PS   Claim 10; Page 56-57; 60pp; English.
XX
CC   The present sequence is that of a scorpion (Buthotus judaicus) venom
CC   protein showing 29.7% identity to an insecticidal toxin of Orthochirus
CC   scrobiculosus. The sequence was predicted from a cDNA clone (see
CC   AAA89397) isolated from the scorpion telson cDNA library. The invention
CC   provides isolated nucleic acid sequences (see AAA89386-400) encoding
CC   scorpion toxins (see AAB20064-78) that are sodium channel modifiers. The
CC   invention also relates to the construction of a chimeric gene encoding
CC   all or part of the sodium channel modifier, in sense or antisense
```

```
CC   orientation, where expression of the chimeric gene results in production
CC   of altered levels of the sodium channel modifier in a transformed host
CC   cell. Sodium channel modifiers can be used to treat neurological problems
CC   involving abnormal functioning of excitory amino acid synapses, e.g.
CC   epilepsy, Huntington's disease and neuronal death following stroke.
CC   Genetically engineered recombinant baculoviruses which express protein
CC   toxins capable of incapacitating an insect host can be used as biological
CC   insecticides. The nucleic acids can be used to create transgenic plants
CC   in which sodium channel agonists of the invention are expressed for
CC   improved insect tolerance. (Updated on 11-SEP-2003 to standardise OS
CC   field)
XX
SQ   Sequence 89 AA;

  Query Match             48.0%;  Score 164.5;  DB 4;  Length 89;
  Best Local Similarity   45.6%;  Pred. No. 1.7e-11;
  Matches   26;  Conservative    9;  Mismatches   21;  Indels    1;  Gaps    1;

Qy          2 DVPGNYPLDSSDNTYLCAPLGDNPDCIKICQKHGVDYGYCYAFQCWCEFLKDENVKV 58
              | |||||:     :| |     |  |: ||: ||| |||||:   ||||:|| |:: :
Db         24 DTPGNYPISVYGTSYGCTAFNHN-YCVDICKVHGVKYGYCWVTSCWCEYLKKEDIDI 79


RESULT 6
AAB20077
ID   AAB20077 standard; protein; 89 AA.
XX
AC   AAB20077;
XX
DT   11-SEP-2003  (revised)
DT   23-APR-2001  (first entry)
XX
DE   Scorpion sodium channel agonist (insecticidal toxin).
XX
KW   Scorpion; venom; toxin; sodium channel agonist; anticonvulsant;
KW   nootropic; cerebroprotective; insecticide.
XX
OS   Hottentotta judaica.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .21
FT                   /label= Sig_peptide
FT   Protein         22. .89
FT                   /label= Mature_protein
XX
PN   WO200078957-A2.
XX
PD   28-DEC-2000.
XX
PF   21-JUN-2000; 2000WO-US017048.
XX
PR   22-JUN-1999;   99US-0140410P.
XX
PA   (DUPO ) DU PONT DE NEMOURS & CO E I.
XX
PI   Herrmann R,  Lee J,  Wong JF;
XX
DR   WPI; 2001-050111/06.
DR   N-PSDB; AAA89399.
XX
PT   New isolated polynucleotide encoding a scorpion toxin for treating
PT   epilepsy, degenerative disorders such as Huntington's disease, and
PT   neuronal death following stroke, and for creating plants that are insect-
PT   tolerant.
XX
PS   Claim 10; Page 57-58; 60pp; English.
XX
CC   The present sequence is that of a scorpion (Buthotus judaicus) venom
CC   protein showing 29.6% identity to an insecticidal toxin of Orthochirus
CC   scrobiculosus. The sequence was predicted from a cDNA clone (see
CC   AAA89399) isolated from the scorpion telson cDNA library. The invention
CC   provides isolated nucleic acid sequences (see AAA89386-400) encoding
CC   scorpion toxins (see AAB20064-78) that are sodium channel modifiers. The
CC   invention also relates to the construction of a chimeric gene encoding
CC   all or part of the sodium channel modifier, in sense or antisense
CC   orientation, where expression of the chimeric gene results in production
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```
CC   of altered levels of the sodium channel modifier in a transformed host
CC   cell. Sodium channel modifiers can be used to treat neurological problems
CC   involving abnormal functioning of excitory amino acid synapses, e.g.
CC   epilepsy, Huntington's disease and neuronal death following stroke.
CC   Genetically engineered recombinant baculoviruses which express protein
CC   toxins capable of incapacitating an insect host can be used as biological
CC   insecticides. The nucleic acids can be used to create transgenic plants
CC   in which sodium channel agonists of the invention are expressed for
CC   improved insect tolerance. (Updated on 11-SEP-2003 to standardise OS
CC   field)
XX
SQ   Sequence 89 AA;

  Query Match             47.1%;  Score 161.5;  DB 4;  Length 89;
  Best Local Similarity   45.5%;  Pred. No. 3.7e-11;
  Matches   25;  Conservative   11;  Mismatches   18;  Indels    1;  Gaps    1;

Qy          4 PGNYPLDSSDNTYLCAPLGDNPDCIKICQKHGVDYGYCYAFQCWCEFLKDENVKV 58
              |||||:     :| |    |:  |  ||: |||:||||:   ||||:||:|:: :
Db         26 PGNYPISIYGQSYGCTS-SDHDYCADICKVHGVNYGYCWVTSCWCEYLKEEDINI 79


RESULT 7
AAB20076
ID   AAB20076 standard; protein; 89 AA.
XX
AC   AAB20076;
XX
DT   11-SEP-2003  (revised)
DT   23-APR-2001  (first entry)
XX
DE   Scorpion sodium channel agonist (insecticidal toxin).
XX
KW   Scorpion; venom; toxin; sodium channel agonist; anticonvulsant;
KW   nootropic; cerebroprotective; insecticide.
XX
OS   Hottentotta judaica.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .21
FT                   /label= Sig_peptide
FT   Protein         22. .89
FT                   /label= Mature_protein
XX
PN   WO200078957-A2.
XX
PD   28-DEC-2000.
XX
PF   21-JUN-2000; 2000WO-US017048.
XX
PR   22-JUN-1999;   99US-0140410P.
XX
PA   (DUPO ) DU PONT DE NEMOURS & CO E I.
XX
PI   Herrmann R,  Lee J,  Wong JF;
XX
DR   WPI; 2001-050111/06.
DR   N-PSDB; AAA89398.
XX
PT   New isolated polynucleotide encoding a scorpion toxin for treating
PT   epilepsy, degenerative disorders such as Huntington's disease, and
PT   neuronal death following stroke, and for creating plants that are insect-
PT   tolerant.
XX
PS   Claim 10; Page 57; 60pp; English.
XX
CC   The present sequence is that of a scorpion (Buthotus judaicus) venom
CC   protein showing 29.6% identity to an insecticidal toxin of Orthochirus
CC   scrobiculosus. The sequence was predicted from a cDNA clone (see
CC   AAA89398) isolated from the scorpion telson cDNA library. The invention
CC   provides isolated nucleic acid sequences (see AAA89386-400) encoding
CC   scorpion toxins (see AAB20064-78) that are sodium channel modifiers. The
CC   invention also relates to the construction of a chimeric gene encoding
CC   all or part of the sodium channel modifier, in sense or antisense
CC   orientation, where expression of the chimeric gene results in production
CC   of altered levels of the sodium channel modifier in a transformed host
```

```
CC   cell. Sodium channel modifiers can be used to treat neurological problems
CC   involving abnormal functioning of excitory amino acid synapses, e.g.
CC   epilepsy, Huntington's disease and neuronal death following stroke.
CC   Genetically engineered recombinant baculoviruses which express protein
CC   toxins capable of incapacitating an insect host can be used as biological
CC   insecticides. The nucleic acids can be used to create transgenic plants
CC   in which sodium channel agonists of the invention are expressed for
CC   improved insect tolerance. (Updated on 11-SEP-2003 to standardise OS
CC   field)
XX
SQ   Sequence 89 AA;

  Query Match             44.5%;  Score 152.5;  DB 4;  Length 89;
  Best Local Similarity   43.6%;  Pred. No. 4.3e-10;
  Matches   24;  Conservative   11;  Mismatches   19;  Indels    1;  Gaps    1;

Qy          4 PGNYPLDSSDNTYLCAPLGDNPDCIKICQKHGVDYGYCYAFQCWCEFLKDENVKV 58
              |||||:     :| |     :  |  ||: |||:||||:   ||||:||:|:: :
Db         26 PGNYPISIYGKSYGCTS-SYHDYCADICKVHGVNYGYCWVTSCWCEYLKEEDINI 79


RESULT 8
AAB20078
ID   AAB20078 standard; protein; 89 AA.
XX
AC   AAB20078;
XX
DT   11-SEP-2003  (revised)
DT   23-APR-2001  (first entry)
XX
DE   Scorpion sodium channel agonist (insecticidal toxin).
XX
KW   Scorpion; venom; toxin; sodium channel agonist; anticonvulsant;
KW   nootropic; cerebroprotective; insecticide.
XX
OS   Hottentotta judaica.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .21
FT                   /label= Sig_peptide
FT   Protein         22. .89
FT                   /label= Mature_protein
XX
PN   WO200078957-A2.
XX
PD   28-DEC-2000.
XX
PF   21-JUN-2000; 2000WO-US017048.
XX
PR   22-JUN-1999;   99US-0140410P.
XX
PA   (DUPO ) DU PONT DE NEMOURS & CO E I.
XX
PI   Herrmann R,  Lee J,  Wong JF;
XX
DR   WPI; 2001-050111/06.
DR   N-PSDB; AAA89400.
XX
PT   New isolated polynucleotide encoding a scorpion toxin for treating
PT   epilepsy, degenerative disorders such as Huntington's disease, and
PT   neuronal death following stroke, and for creating plants that are insect-
PT   tolerant.
XX
PS   Claim 10; Page 58; 60pp; English.
XX
CC   The present sequence is that of a scorpion (Buthotus judaicus) venom
CC   protein showing 29.6% identity to an insecticidal toxin of Orthochirus
CC   scrobiculosus. The sequence was predicted from a cDNA clone (see
CC   AAA89400) isolated from the scorpion telson cDNA library. The invention
CC   provides isolated nucleic acid sequences (see AAA89386-400) encoding
CC   scorpion toxins (see AAB20064-78) that are sodium channel modifiers. The
CC   invention also relates to the construction of a chimeric gene encoding
CC   all or part of the sodium channel modifier, in sense or antisense
CC   orientation, where expression of the chimeric gene results in production
CC   of altered levels of the sodium channel modifier in a transformed host
CC   cell. Sodium channel modifiers can be used to treat neurological problems
```

```
CC   involving abnormal functioning of excitory amino acid synapses, e.g.
CC   epilepsy, Huntington's disease and neuronal death following stroke.
CC   Genetically engineered recombinant baculoviruses which express protein
CC   toxins capable of incapacitating an insect host can be used as biological
CC   insecticides. The nucleic acids can be used to create transgenic plants
CC   in which sodium channel agonists of the invention are expressed for
CC   improved insect tolerance. (Updated on 11-SEP-2003 to standardise OS
CC   field)
XX
SQ   Sequence 89 AA;

  Query Match             44.5%;  Score 152.5;  DB 4;  Length 89;
  Best Local Similarity   43.6%;  Pred. No. 4.3e-10;
  Matches   24;  Conservative   11;  Mismatches   19;  Indels    1;  Gaps    1;

Qy          4 PGNYPLDSSDNTYLCAPLGDNPDCIKICQKHGVDYGYCYAFQCWCEFLKDENVKV 58
              |||||:     :| |     :  |  ||: |||:|||||:   ||||:||:|:: :
Db         26 PGNYPISIYGKSYGCTS-SYHDYCADICKVHGVNYGYCWVTSCWCEYLKEEDINI 79

<!--EndFragment-->
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